

DOCKET NO. P05827
SERIAL NO. 10/803,273
PATENT

IN THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A method for manufacturing an isolation trench in a semiconductor device, said method comprising the steps of:
 - providing a substrate for said semiconductor device;
 - etching a trench in said substrate;
 - growing a silicon dioxide liner in said trench;
 - filling said trench with polysilicon material;
 - depositing polysilicon material on top of said filled trench to protect said silicon dioxide liner; [[and]]
 - etching the deposited polysilicon material so as to leave a portion of the deposited polysilicon material that is over the trench and that extends laterally over at least one edge of the trench; and
 - placing a layer of oxidation material over the portion of the deposited polysilicon material.

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2. (Currently Amended) The method as set forth in Claim 1 wherein said step of depositing polysilicon material on top of said filled trench to protect said silicon dioxide liner comprises the step of:

forming said polysilicon material that is placed on top of said filled trench with portions that extend laterally over ~~the at least one~~ all edges of said filled trench.

3. (Currently Amended) The method as set forth in Claim 1 wherein said step of growing a silicon dioxide liner in said trench further comprises the step of:

growing said silicon dioxide liner on horizontal portions of said substrate that are adjacent to the ~~at least one edge of said filled trench~~.

4. (Currently Amended) The method as set forth in Claim 3 wherein the portion of the deposited polysilicon material extends laterally over said horizontal portions of said substrate ~~at the at least one edge of said filled trench that is~~ that are covered with the silicon dioxide liner.

5. (Currently Amended) The method as set forth in Claim 4 ~~further comprising the step of:~~ wherein placing the layer of oxidation material over the portion of the deposited polysilicon material comprises:

placing ~~[[a]]~~ the layer of oxidation material over said portion of the deposited polysilicon material ~~that is placed on top of said filled trench~~ during a subsequent oxidation process.

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6. (Original) The method as set forth in Claim 1 further comprising the step of:
selecting an initial height of said polysilicon material that is deposited on top of said
filled trench that is sufficient for said polysilicon material to survive one of: at least
one subsequent etch procedure and at least one subsequent oxidation procedure.

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7. (Currently Amended) A method for manufacturing an isolation trench in a semiconductor device, said method comprising the steps of:

- providing a monocrystalline silicon substrate layer for said semiconductor device;
- applying a silicon dioxide layer over said monocrystalline silicon substrate layer;
- applying a layer of photoresist over said silicon dioxide layer;
- exposing and developing said photoresist from a trench area;
- etching portions of said silicon dioxide layer in said trench area;
- removing said photoresist;
- etching a trench in said trench area of said monocrystalline silicon substrate layer;
- etching portions of said silicon dioxide layer to pull back said silicon dioxide layer from at least one edge of said trench;
- growing a silicon dioxide liner in said trench;
- filling said trench with polysilicon material;
- depositing polysilicon material on top of said filled trench to protect said silicon dioxide liner; [[and]]
- etching the deposited polysilicon material so as to leave a portion of the deposited polysilicon material that is over the trench and that extends laterally over the at least one edge of the trench; and
- placing a layer of oxidation material over the portion of the deposited polysilicon material.

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8. (Currently Amended) The method as set forth in Claim 7 wherein said step of depositing polysilicon material on top of said filled trench to protect said silicon dioxide liner comprises the step of:

forming said polysilicon material that is placed on top of said filled trench with portions that extend laterally over ~~the at least one~~ all edges of said filled trench.

9. (Currently Amended) The method as set forth in Claim 7 wherein said step of growing a silicon dioxide liner in said trench further comprises the step of:

growing said silicon dioxide liner on horizontal portions of said substrate that are adjacent to the ~~at least one edge of said~~ filled trench.

10. (Currently Amended) The method as set forth in Claim 9 wherein the portion of the deposited polysilicon material extends laterally over said horizontal portions of said substrate ~~at the at least one edge of said filled trench that is~~ that are covered with the silicon dioxide liner.

11. (Currently Amended) The method as set forth in Claim 10 ~~further comprising the step of~~ wherein placing the layer of oxidation material over the portion of the deposited polysilicon material comprises:

placing [[a]] the layer of oxidation material over said portion of the deposited polysilicon material ~~that is placed on top of said filled trench~~ during a subsequent oxidation process.

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12. (Original) The method as set forth in Claim 7 further comprising the step of:
selecting an initial height of said polysilicon material that is deposited on top of said
filled trench that is sufficient for said polysilicon material to survive one of: at least
one subsequent etch procedure and at least one subsequent oxidation procedure.

Claims 13-20 (Cancelled).

21. (New) A method, comprising:
growing a silicon dioxide liner in a trench of a substrate;
depositing polysilicon material in the trench and on top of the trench;
etching the deposited polysilicon material so as to leave at least one portion of the
deposited polysilicon material that is over the trench and that extends laterally over at least one
edge of the trench; and
placing a layer of oxidation material over the at least one portion of the deposited
polysilicon material.

22. (New) The method of Claim 21, wherein depositing the polysilicon
material comprises depositing the polysilicon material on top of the trench with portions that
extend laterally over all edges of the trench.

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23. (New) The method of Claim 21, wherein growing the silicon dioxide liner comprises growing the silicon dioxide liner on one or more horizontal portions of the substrate adjacent to the trench.

24. (New) The method of Claim 23, wherein the at least one portion of the polysilicon material extends laterally over the at least one horizontal portion of the substrate covered with the silicon dioxide liner.

25. (New) The method of Claim 21, wherein placing the layer of oxidation material over the at least one portion of the deposited polysilicon material comprises depositing the layer of oxidation material during a subsequent oxidation process.

26. (New) The method of Claim 21, further comprising selecting an initial height of the polysilicon material that is deposited on top of the trench, the initial height sufficient for the polysilicon material to survive at least one of: a subsequent etch procedure and a subsequent oxidation procedure.

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27. (New) The method of Claim 21, wherein growing the silicon dioxide liner comprises growing the silicon dioxide liner on one or more horizontal portions of the substrate; and

further comprising stripping away any exposed portions of the silicon dioxide liner after etching of the deposited polysilicon material.

28. (New) The method of Claim 21, wherein placing the layer of oxidation material over the at least one portion of the deposited polysilicon material comprises:

creating a silicon dioxide layer over the at least one portion of the deposited polysilicon material.